

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:      Watson et al.      )  
Serial No.:      Unknown      ) Art Unit  
Filed:      Concurrently      ) Unknown  
For:      HOLDER MOVER FOR A STAGE ASSEMBLY )  
Examiner:      Unknown      )  
Attorney Docket:      PA0372-US / 11269.37      )

PRELIMINARY AMENDMENT

Box Patent Application  
US Patent and Trademark Office  
P.O Box 2327  
Arlington, VA 22202

Sir:

This Preliminary amendment is being filed concurrently with the Application.

Please amend the above-captioned patent application as set forth below.

**In the Specification:**

Please replace the paragraph beginning on page 22, line 17, with the following paragraph:

In the embodiment illustrated in Figure 2G, each of the protrusions 74K is substantially spherical shaped and fits into one of the connector receivers 74L to connect the device holder 24 to the carrier 60. Each connector receiver 74L can be a groove having a substantially triangular shaped cross-section. Each of the connector receivers 74L illustrated in Figure 2G extends radially. With this design, each protrusion 74K primarily contacts two surfaces of one of the receivers 74L. At each contact point, there is exactly one constraint assuming there can be sliding between the parts. Because there are two contact points per protrusion 74K, the holder connector assembly 62 illustrated in Figure 2G has a total of six degrees of constraint.

Please replace the paragraph beginning on page 55, line 3, with the following paragraph:

In Figure 6K, the holder mover 120 is a motor 144 secured to the stage 15. The type of motor 144 utilized can be a rotary motor, an electromagnetic actuator, or other type of actuator. In Figure 6K, the motor 144 is a rotary type motor that rotates an output wheel 146 that engages a portion, e.g. an outer perimeter the carrier 60. The motor 144 is secured to the stage 15 near the edge of the device table 20. Also, in this embodiment, the holder mover 120 includes a motor damper 147 that secures the motor 144 to the stage 15. The motor damper 147 inhibits and dampens the reaction forces generated by the motor 144 from being transferred to the stage 15. The motor damper 147 can include a reaction mass assembly, a fluid cylinder, resilient material such as a viscoelastic material, or other type of vibration damping device. Alternately, for example, the motor could be secured directly to the device table 20.

Please replace the paragraph beginning on page 58, line 1, with the following paragraph:

In Figure 6M, the holder mover 120 includes the motor 144. The type of motor 144 utilized can be a rotary motor, an electromagnetic actuator, or other type of actuator. In Figure 6M, the motor 144 is a rotary type motor that is secured to the device table 20. In this embodiment, the motor 144 includes an output shaft 148 and a flexible connector 149 that flexibly connects the output shaft 148 to the device holder 24 along the holder axis of rotation 75. The flexible connector 149, for example, can be made of a resilient material.

Please replace the paragraph beginning on page 58, line 24, with the following paragraph:

In Figure 6MM, the holder mover 120 includes the motor 144 similar to the holder mover 120 illustrated in Figure 6M. The type of motor 144 utilized can be a rotary motor, an electromagnetic actuator, or other type of actuator. In Figure 6MM, the motor 144 is a rotary type motor that is secured to the stage 15 and extends through an aperture 150 in the device table 20. In this embodiment, the motor 144 includes the output shaft 148 and the flexible connector 149 that flexibly connects the output shaft 148 to the device holder 24 along the holder axis of rotation 75. Further, because the motor 144 is secured to the stage 15, this reduces the amount of heat and reaction forces that are transferred to the device table 20.

Please replace the paragraph beginning on page 59, line 20, with the following paragraph:

In Figure 6N, the holder mover 120 includes the motor 144. The type of motor 144 utilized can be a rotary motor, an electromagnetic actuator, or other type of actuator. In Figure 6N, the motor 144 is a rotary type motor that is secured to the device table 20. In this embodiment, the motor 144 includes the output shaft 148 and the flexible connector 149 that flexibly connects the output shaft 148 to the carrier 60 along the holder axis of rotation 75.

Please replace the paragraph beginning on page 60, line 12, with the following paragraph:

In Figure 6NN, the holder mover 120 includes the motor 144. The type of motor 144 utilized can be a rotary motor, an electromagnetic actuator, or other type of actuator. In Figure 6NN, the motor 144 is a rotary type motor that is secured to the stage 15 and extends through an aperture 150 in the device table 20. In this embodiment, the motor 144 includes the output shaft 148 and the flexible connector 149 that flexibly connects the output shaft 148 to the carrier 60 along the holder axis of rotation 75. Further, because the motor 144 is secured to the stage 15, this reduces the amount of heat and reaction forces that are transferred to the device table 20.

Please replace the paragraph beginning on page 61, line 5, with the following paragraph:

In Figure 6O, the holder mover 120 is motor 152 that includes a first component 154 (illustrated in phantom) and an adjacent second component 156 (illustrated in phantom), which interacts with the first component 154. One of the components 154, 156 includes a magnet array and the other component 154, 156 includes a conductor array. The design of each magnet array and the number of magnets in each magnet array can be varied to suit the design requirements of the motor 152. Each magnet can be made of a permanent magnetic material such as NdFeB. The design of each conductor array and the number of conductors in each conductor array is varied to suit the design requirements of the motor 152. Each conductor can be made of metal such as copper or any substance or material responsive to electrical current and capable of creating a magnetic field.

Please replace the paragraph beginning on page 63, line 6, with the following paragraph:

In Figure 6Q, the holder mover 120 is motor 152 that includes the first component 154 (illustrated in phantom) and the adjacent second component 156 (illustrated in phantom), which interacts with the first component 154. One of the components 154, 156 includes a magnet array and the other component 154, 156

includes a conductor array. The design of each magnet array and the number of magnets in each magnet array can be varied to suit the design requirements of the motor 152. Each magnet can be made of a permanent magnetic material such as NdFeB. The design of each conductor array and the number of conductors in each conductor array is varied to suit the design requirements of the motor 152. Each conductor can be made of metal such as copper or any substance or material responsive to electrical current and capable of creating a magnetic field.

Please replace the paragraph beginning on page 64, line 29, with the following paragraph:

In Figure 6S, the holder mover 120 is a motor 152 that includes the first component 154 (illustrated in phantom) and the adjacent second component 156 (illustrated in phantom), which interacts with the first component 154. One of the components 154, 156 includes a magnet array and the other component 154, 156 includes a conductor array. The design of each magnet array and the number of magnets in each magnet array can be varied to suit the design requirements of the motor 152. Each magnet can be made of a permanent magnetic material such as NdFeB. The design of each conductor array and the number of conductors in each conductor array is varied to suit the design requirements of the motor 152. Each conductor can be made of metal such as copper or any substance or material responsive to electrical current and capable of creating a magnetic field.

### REMARKS

The specification has been amended. No new matter has been added by the amendment to the specification. Consideration of the application is respectfully requested.

RECEIVED

**Version with markings to show changes made:**

**In the Specification:**

The paragraph beginning on page 22, line 17, has been amended as follows:

In the embodiment illustrated in Figure 2G, each of the protrusions 74K is substantially spherical shaped and fits into one of the connector receivers 74L to connect the device holder 24 to the carrier 60. Each connector receiver 74L can be a groove having a substantially triangular shaped cross-section. Each of the connector receivers 74L illustrated in Figure 2G extends radially. With this design, each protrusion 74K primarily contacts two surfaces of one of the receivers 74L. At each contact point, there is exactly one constraint assuming there can be sliding between the parts. Because there are two contact points per protrusion 74K, the holder connector assembly 62 illustrated in Figure 2G has a total of six degrees of constraint.

The paragraph beginning on page 55, line 3, has been amended as follows:

In Figure 6K, the holder mover 120 is a motor 144 secured to the stage 15. The type of motor 144 utilized can be a rotary motor, [a voice coil motor, a linear motor,] an electromagnetic actuator, or other type of actuator. In Figure 6K, the motor 144 is a rotary type motor that rotates an output wheel 146 that engages a portion, e.g. an outer perimeter the carrier 60. The motor 144 is secured to the stage 15 near the edge of the device table 20. Also, in this embodiment, the holder mover 120 includes a motor damper 147 that secures the motor 144 to the stage 15. The motor damper 147 inhibits and dampens the reaction forces generated by the motor 144 from being transferred to the stage 15. The motor damper 147 can include a reaction mass assembly, a fluid cylinder, resilient material such as a viscoelastic material, or other type of vibration damping device. Alternately, for example, the motor could be secured directly to the device table 20.

The paragraph beginning on page 58, line 1, has been amended as follows:

In Figure 6M, the holder mover 120 includes the motor 144. The type of motor 144 utilized can be a rotary motor, [a voice coil motor, a linear motor,] an electromagnetic actuator, or other type of actuator. In Figure 6M, the motor 144 is a rotary type motor that is secured to the device table 20. In this embodiment, the motor 144 includes an output shaft 148 and a flexible connector 149 that flexibly connects the output shaft 148 to the device holder 24 along the holder axis of rotation 75. The flexible connector 149, for example, can be made of a resilient material.

The paragraph beginning on page 58, line 24, has been amended as follows:

In Figure 6MM, the holder mover 120 includes the motor 144 similar to the holder mover 120 illustrated in Figure 6M. The type of motor 144 utilized can be a rotary motor, [a voice coil motor, a linear motor,] an electromagnetic actuator, or other type of actuator. In Figure 6MM, the motor 144 is a rotary type motor that is secured to the stage 15 and extends through an aperture 150 in the device table 20. In this embodiment, the motor 144 includes the output shaft 148 and the flexible connector 149 that flexibly connects the output shaft 148 to the device holder 24 along the holder axis of rotation 75. Further, because the motor 144 is secured to the stage 15, this reduces the amount of heat and reaction forces that are transferred to the device table 20.

The paragraph beginning on page 59, line 20, has been amended as follows:

In Figure 6N, the holder mover 120 includes the motor 144. The type of motor 144 utilized can be a rotary motor, [a voice coil motor, a linear motor,] an electromagnetic actuator, or other type of actuator. In Figure 6N, the motor 144 is a rotary type motor that is secured to the device table 20. In this embodiment, the motor 144 includes the output shaft 148 and the flexible connector 149 that flexibly connects the output shaft 148 to the carrier 60 along the holder axis of rotation 75.

The paragraph beginning on page 60, line 12, has been amended as follows:

In Figure 6NN, the holder mover 120 includes the motor 144. The type of motor 144 utilized can be a rotary motor, [a voice coil motor, a linear motor,] an



electromagnetic actuator, or other type of actuator. In Figure 6NN, the motor 144 is a rotary type motor that is secured to the stage 15 and extends through an aperture 150 in the device table 20. In this embodiment, the motor 144 includes the output shaft 148 and the flexible connector 149 that flexibly connects the output shaft 148 to the carrier 60 along the holder axis of rotation 75. Further, because the motor 144 is secured to the stage 15, this reduces the amount of heat and reaction forces that are transferred to the device table 20.

The paragraph beginning on page 61, line 5, has been amended as follows:

In Figure 6O, the holder mover 120 is motor 152 that includes a first component 154 (illustrated in phantom) and an adjacent second component 156 (illustrated in phantom), which interacts with the first component 154. One of the components 154, 156 includes a magnet array and the other component 154, 156 includes a conductor array. The design of each magnet array and the number of magnets in each magnet array can be varied to suit the design requirements of the motor 152. Each magnet can be made of a permanent magnetic material such as NdFeB. The design of each conductor array and the number of conductors in each conductor array is varied to suit the design requirements of the motor 152. Each conductor can be made of metal such as copper or any substance or material responsive to electrical current and capable of creating a magnetic field [such as superconductors].

The paragraph beginning on page 63, line 6, has been amended as follows:

In Figure 6Q, the holder mover 120 is motor 152 that includes the first component 154 (illustrated in phantom) and the adjacent second component 156 (illustrated in phantom), which interacts with the first component 154. One of the components 154, 156 includes a magnet array and the other component 154, 156 includes a conductor array. The design of each magnet array and the number of magnets in each magnet array can be varied to suit the design requirements of the motor 152. Each magnet can be made of a permanent magnetic material such as NdFeB. The design of each conductor array and the number of conductors in each conductor array is varied to suit the design requirements of the motor 152. Each

conductor can be made of metal such as copper or any substance or material responsive to electrical current and capable of creating a magnetic field [such as superconductors].

The paragraph beginning on page 64, line 29, has been amended as follows:

In Figure 6S, the holder mover 120 is a motor 152 that includes the first component 154 (illustrated in phantom) and the adjacent second component 156 (illustrated in phantom), which interacts with the first component 154. One of the components 154, 156 includes a magnet array and the other component 154, 156 includes a conductor array. The design of each magnet array and the number of magnets in each magnet array can be varied to suit the design requirements of the motor 152. Each magnet can be made of a permanent magnetic material such as NdFeB. The design of each conductor array and the number of conductors in each conductor array is varied to suit the design requirements of the motor 152. Each conductor can be made of metal such as copper or any substance or material responsive to electrical current and capable of creating a magnetic field [such as superconductors].

CONCLUSION

In conclusion, Applicants respectfully assert that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

Dated this 29<sup>th</sup> day of November, 2001.

Respectfully submitted,



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